

**REMARKS/ARGUMENTS**

Independent Claims 1 and 5 have been amended to recite an extraneous matter removing system for a steam turbine including a control unit for regulating the opening of a valve according to the pressure detected by said pressure gage so that the valve is opened when the detected pressure has a value between a predetermined minimum pressure and a predetermined maximum pressure so that extraneous matter adhering to the surface of a turbine blade is removed by water injected. Support for these amendments is found on pg. 13, lines 20-23.

**I. Information Disclosure Statement**

A copy of the European Search Report was filed on November 25, 2005. Upon reviewing Public PAIR, Applicant has discovered that the European Search Report was scanned in with JP60-6924. Specifically, the European Search Report can be found at the end of JP60-6924.

**II. Rejections under 35 USC § 103(a)**

**A) Rejection of Claims 1-3 and 5**

Claims 1-3 and 5 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Tazaki (US Patent No. 6,502,403) hereinafter "Tazaki" in view of Hibara (JP 60-69214) hereinafter "Hibara".

To establish a *prima facie* case of obviousness there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine reference teachings. Additionally, the prior art references must teach or suggest all claim limitations. Furthermore, the teaching or suggestion to make the claimed invention must be found in the prior art, not in applicant's disclosure. Accordingly, Examiner has failed to prove a *prima facie* case of obviousness because the references cited do not teach or suggest each and every claimed

limitation nor demonstrate any suggestion to modify or combine the prior art in the manner suggested by the Examiner.

*(i) All Elements are not Taught or Suggested by the Cited References*

Tazaki and Hibara fail to teach or suggest each and every element of independent Claims 1 and 5 as currently claimed. In particular, Claims 1 and 5 recite an extraneous matter removing system for a steam turbine including a control unit for regulating the opening of a valve according to the pressure detected by a pressure gage so that the valve is opened when the detected pressure has a value between a predetermined minimum pressure and a predetermined maximum pressure. The cited references, when considered alone or in any combination thereof, fail to teach or suggest an extraneous matter removing system for a steam turbine including a control unit for regulating the opening of a valve according to the pressure detected by a pressure gage, so that the valve is opened when the detected pressure has a value between a predetermined minimum pressure and a predetermined maximum pressure so that extraneous matter adhering to the surface of a turbine blade is removed by water injected from the water injection nozzle.

In general, Tazaki relates to gas turbines with a system for cooling the stationary blades. More specifically, Tazaki is directed to a gas turbine wherein the exhaust is directed to a waste heat boiler that produces steam. The steam produced from the waste heat boiler is first supplied to any external loads, while any excess steam is used to cool the stationary blades of the gas turbine. Specifically, an object of Tazaki is “to use surplus steam effectively and to cool the stationary blades of a turbine without entailing the reduction of the output and thermal efficiency of the gas turbine.” Additionally, Tazaki teaches that the excess steam supplied to the stationary blades can be supplemented with compressed air to provide the necessary cooling if the excess steam flow drops; thus, allowing operation of a gas turbine without continuous use of compressed air to cool the stationary blades. At no point does Tazaki discuss the following: (1) any applicability to steam turbines; (2) removal of extraneous matter from blades; and (3) the operation of an extraneous removal system operated when the detected pressure is between a predetermined minimum pressure and a predetermined maximum pressure. Cleary, Tazaki has

no intention of removing extraneous matter or operating a system as currently claimed. As such, Tazaki does not teach or suggest each and every element of currently amended Claims 1 and 5.

Hibara is directed to a specific nozzle for the spouting of pressurized water to prevent adhesion of scale build up in a steam turbine. Similar to Tazaki, Hibara does not teach or suggest each and every element of currently amended Claims 1 and 5. Specifically, Hibara also fails to explicitly or implicitly teach or suggest an extraneous matter removing system for a steam turbine including a control unit for regulating the opening of a valve according to the pressure detected by a pressure gage so that the valve is opened when the detected pressure has a value between a predetermined minimum pressure and a predetermined maximum pressure. Hibara only teaches a nozzle configuration and provides no guidance in constructing a system including a control unit for regulating the opening of a valve according to the pressure detected by a pressure gage, so that the valve is opened when the detected pressure has a value between a predetermined minimum pressure and a predetermined maximum pressure so that extraneous matter adhering to the surface of a turbine blade is removed by water injected from the water injection nozzle. Hibara merely discloses one such element; namely, a nozzle. Therefore, Hibara also does not teach or suggest each and every element of currently amended Claims 1 and 5.

Since both Tazaki and Hibara fail to teach or suggest an extraneous matter removing system for a steam turbine operated between a predetermined minimum pressure and predetermined maximum pressure, any combination of these references also fails to teach or suggest each and every claimed element as recited in Claims 1 and 5.

*(ii) No Suggestion or Motivation*

The Examiner has failed to offer any support that the prior art, including the knowledge generally available to one of ordinary skill in the art, provides any suggestion or motivation to modify the gas turbine blade cooling teachings of Tazaki with the nozzle configuration for steam turbines of Hibara. Additionally, the Examiner has failed to offer any support for combining the teachings of Tazaki and Hibara to achieve the currently claimed invention. Specifically, the obviousness rejection offers mere conclusions to indicate why one of ordinary skill in the art

would seek to combine the teachings of the cited references. Conclusory statements are insufficient to establish a *prima facie* case of obviousness. Moreover, a prior art reference that gives only general guidance, and is not at all specific as to the particular form of the claimed invention and how to achieve it, may make certain approaches obvious to try, but does not make the invention obvious.

Similarly, Hibara merely provides a teaching of a specific nozzle configuration to prevent adhesion of scale in a steam turbine. This statement fails to provide any guidance to modify the teachings of Tazaki to achieve the currently claimed extraneous matter removal system including a control unit for regulating the opening of a valve according to the pressure detected by a pressure gage so that the valve is opened when the detected pressure has a value between a predetermined minimum pressure and a predetermined maximum pressure as recited in Claims 1 and 5. Furthermore, Tazaki never discusses any of the following: (1) the problem of extraneous matter on turbine blades; (2) the removal of extraneous matter from turbine blades; or (3) the desirability of removing extraneous matter from blades. Accordingly, one skilled in the art would not be motivated to apply Hibara to Tazaki. Thus, the necessary motivation to modify Tazaki or combine Tazaki with Hibara in the manner as currently claimed is not present.

For these and the other reasons stated above, it is respectfully submitted that the rejections of Claims 1-3 and 5 under 35 U.S.C. §103 (a) have been overcome.

#### **B) Rejection of Dependent Claims 4, 6 and 7**

Claims 4, 6 and 7 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Tazaki and Hibara and further in view of Rice (US Patent No. 4,384,452) hereinafter "Rice." Claim 4 is dependent upon Claim 1 and Claims 6 and 7 are dependent upon Claim 5. Both independent Claims 1 and 5 have been amended to recite an extraneous matter removing system for a steam turbine including a control unit for regulating the opening of a valve according to the pressure detected by a pressure gage so that the valve is opened when the detected pressure has a value between a predetermined minimum pressure and a predetermined maximum pressure. Accordingly, dependent Claims 4, 6, and 7 also currently recite this element.

In general, Rice is directed to a gas turbine using steam as a blade coolant instead of air. Rice teaches that steam is a superior coolant than air due to its preferred physical properties such as its thermal conductivity, specific heat, lower viscosity etc... Rice also teaches that hot corrosion is a concern due to the elevated temperatures of gas turbines. Providing a steam blanket over much of the blades as taught in Rice protects the steam covered areas (sections of the blades) from direct contact with the corrosive products of combustion. However, Rice teaches that a steam blanket cannot adequately protect the leading edges of the blades and therefore require a protective coating from the heat of the moving fluid. Accordingly, Rice teaches the use of protective coatings on leading edges because they are not adequately covered by the steam coolant.

Similar to Tazaki and Hibara, Rice fails to teach every element of the currently claimed invention. Specifically, Rice fails to teach or suggest an extraneous matter removing system for a steam turbine including a control unit for regulating the opening of a valve according to the pressure detected by a pressure gage so that the valve is opened when the detected pressure has a value between a predetermined minimum pressure and a predetermined maximum pressure. Rice never discusses the following: (1) any applicability to steam turbines; (2) removal of extraneous matter from blades; and (3) the operation of an extraneous removal system operated when the detected pressure is between a predetermined minimum pressure and predetermined maximum pressure. Like Tazaki, Rice has no intention of removing extraneous matter or operating a system as currently claimed. As such, Rice does not teach or suggest each and every element of currently amended Claims 1 and 5 or any claims dependent thereon (Claims 4, 6, and 7). Additionally, the obviousness rejection offers mere conclusions to indicate why one of ordinary skill in the art would seek to combine the teachings of the cited references. Conclusory statements are insufficient to establish a *prima facie* case of obviousness.

For these and the other reasons stated above, it is respectfully submitted that the rejections of Claims 4, 6 and 7 under 35 U.S.C. §103 (a) have been overcome.

Appl. No.: 10/633,182  
Amdt. dated August 10, 2006  
Reply to Office Action of May 10, 2006

### III. Conclusion

In view of the remarks made above, Applicant submits that the pending Claims are in condition for allowance. Applicant respectfully requests that the claims be allowed to issue. If the Examiner wishes to discuss the application or the comments herein, the Examiner is urged to contact the undersigned.

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required therefore (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 16-0605.

Respectfully submitted,



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**ELECTRONICALLY FILED USING THE EFS-WEB ELECTRONIC FILING SYSTEM OF THE UNITED STATES PATENT & TRADEMARK OFFICE ON August 10, 2006.**